



United States Department of Agriculture  
Forest Service

# **Forest-wide Aquatic Restoration**

## **Environmental Analysis**

**Umatilla National Forest**

***Botanical Resources Report and Biological Evaluation***

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# Introduction

This botanical resources report/Biological Evaluation (BE) presents the existing conditions and analyzes effects from the proposed action to plants (and their respective habitats) that are federally-listed as threatened, endangered, or proposed for federal listing under the Endangered Species Act of 1973 as amended. It also discusses vascular plants, non-vascular plants (mosses and liverworts), lichens, and fungal species currently identified as sensitive by the Regional Forester of the Pacific Northwest Region (FSM 2670.5, USDA Forest Service, July 13, 2015). For this report, these species are collectively called sensitive plant species.

In addition, this report will discuss culturally significant plants. Culturally significant plants is a general term for species that members of Native American tribes use for food, medicine, ceremonial, utilitarian, and other purposes. Treaties between the U.S. Government and various tribes in the area outline the responsibilities of the Federal Government to facilitate the continued health and sustainability of these species on Federal Lands.

This report will also discuss the existing condition, and provide an effects analysis for non-native invasive plants. These are species that have been introduced to the area since European settlement, and that are highly competitive with native plants. Some of these species have been specifically designated by the various states as “noxious weeds”. Some additional species of concern are also tracked, and sometimes targeted for control and/or eradication. For the rest of this report, these species will be referred to as invasive plants.

## Description of project area, purpose, and need, and proposed activities

### Project area

The project area includes all lands located within the boundary of the Umatilla National Forest, and adjacent private lands. The project boundaries are located in northeast Oregon (Grant, Morrow, Umatilla, Union, Wallowa, and Wheeler counties), and southeast Washington (Asotin, Columbia, and Garfield counties). See the associated environmental analysis (EA) for a map and more details.

### Purpose and need

The purpose of this project is to maintain or enhance watershed health, aquatic species recovery, and diversity as required by the Umatilla National Forest Plan (as amended by PACFISH). The Forest Plan directs the Forest to manage fish habitat and riparian areas to achieve increases in fish habitat capability as well as to manage soil and water resources to maintain or enhance the long-term productivity of the Forest. See the associated EA for details.

### Proposed activities

The proposed action includes 18 different categories of projects to address aquatic restoration. These include things like fish passage restoration, large wood placement, channel reconstruction, streambank restoration, livestock fencing, juniper removal, riparian vegetation planting, and several other activities. See the associated EA for details.

## Relevant Federal laws, regulations, Forest Service policies, and Umatilla National Forest plan

### Federal laws

#### Endangered Species Act

The Endangered Species Act of 1973 (ESA) mandates all Federal departments and agencies to conserve listed species and to utilize their authorities in furtherance of the purposes of the ESA. Section 7(a) (2) directs all Federal agencies to insure that any action they authorize, fund, or carry-out does not jeopardize the continued existence of an

endangered or threatened species or designated or proposed critical habitat. The Umatilla National Forest has one listed Threatened plant, Spalding's Catchfly (*Silene spaldingii*). In addition, whitebark pine (*Pinus albicaulis*) is a candidate for federal listing.

## **National Forest Management Act**

The National Forest Management Act of 1976 (NFMA) reorganized, expanded and otherwise amended the Forest and Rangeland Renewable Resources Planning Act of 1974, which called for the management of renewable resources on national forest lands. NFMA requires the Secretary of Agriculture to assess forestlands, develop a management program based on multiple-use, sustained-yield principles, and implement a resource management plan for each unit of the National Forest System. It is the primary statute governing the administration of national forests.

## **National Environmental Policy Act**

The National Environmental Policy Act of 1969 (NEPA) directs federal agencies to "... insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken" [40 CFR §1500.1(b)].

## **Forest Service policy**

### **Forest Service manual 2672.1 sensitive species management**

Sensitive species of native plant and animal species must receive special management emphasis to ensure their viability and to preclude trends toward endangerment that would result in the need for Federal listing. There must be no impacts to sensitive species without an analysis of the significance of adverse effects on the populations, its habitat, and on the viability of the species as a whole.

### **Forest Service manual 2672.4: Biological evaluation process**

The Forest Service shall review all planned, funded, executed, or permitted programs and activities for possible effects on endangered, threatened, proposed, and sensitive species. The biological evaluation is the means of conducting the review and of documenting the findings. Document the findings of the biological evaluation in the decision notice. Where decision notices are not prepared, document the findings in Forest Service files. The biological evaluation may be used or modified to satisfy consultation requirements for a biological assessment of construction projects requiring an EIS.

The objectives of the biological evaluation process are:

1. To ensure that Forest Service actions do not contribute to loss of viability of any native or desired non-native plant, or contribute to a trend towards Federal listing of any species.
2. To comply with the portion of the Endangered Species Act that requires that actions of Federal agencies not jeopardize or adversely modify critical habitat of federally listed species.
3. To provide a process and standard by which to ensure that threatened, endangered, proposed, and sensitive species receive full consideration in the decision making process.

### **Forest Service Manual 2070.2: Native plants policy objectives**

The objectives of the Forest Service native plants policy are:

1. Maintain, restore or rehabilitate native ecosystems so that they are self-sustaining, resistant to invasion by non-native invasive species and/or provide habitat for a broad range of species including, threatened, endangered, and rare species.
2. Maintain adequate protection for soil and water resources, through timely and effective revegetation of disturbed sites that could not be restored naturally.
3. Promote the use of native plant materials for the revegetation, rehabilitation and restoration of native ecosystems.

## Forest Service Region Six revegetation policy

The Region Six revegetation policy directs that:

1. Use local native plant species to meet management objectives.
2. Follow appropriate seed and plant movement guidelines.

## Umatilla National Forest land and resource management plan

The Umatilla NF Land and Resource Management Plan (USDA Forest Service, 1990) includes the following goals, standards and guidelines for ecosystem diversity, threatened and endangered and sensitive species (TES), and wildlife habitat resources.

### Forest plan goals

Forest Management Goal 6: Protect and perpetuate special areas and related resources for their unique values (p 4-2).

Forest Management Goal 11: Maintain or improve habitats for all threatened or endangered plant and animal species on the Forest, and manage habitats for all sensitive species to prevent the species from becoming threatened or endangered (p 4-2).

Forest Management Goal 13: Provide for a diversity of plant and animal communities and species consistent with overall multiple-use objectives. Maintain or enhance ecosystem functions to provide for the long-term integrity (stability) and productivity of biological communities (p 4-2).

Forest Management Goal 14: Provide areas for research and education purposes which are typical of unique natural ecosystems and are in undisturbed or nearly undisturbed condition (p 4-2).

### Forest plan desired future conditions

**Wildlife:** Riparian areas will continue to provide a diversity of habitat conditions. Unique habitats, such as cliffs, talus, and wet areas, will receive protection (p 4-7).

**Threatened, endangered, and sensitive species:** All management activities recognize and will be responsive to the requirements of the Endangered Species Act: Surveys for threatened, endangered, and sensitive plants will essentially be completed (within the next 15 years), lists will be revised, and management plans will protect and enhance identified plants. Federal and regional lists (T&E) will continue to change. Surveys will probably document large numbers of some plants and will result in those species being removed from the lists; other species will probably be located for the first time and will be added. The number of botanical areas on the Forest can be expected to increase slightly as new unique areas are found during sensitive plant surveys (p 4-7).

### Forest plan objectives

**Threatened, endangered, sensitive plant and animal species:** There are no known federally listed threatened or endangered plant species on the forest (NOTE: This has changed, Spalding's catchfly is now listed under ESA as threatened). Twenty-two plant species found on the Forest have been listed on the Region 6 Sensitive plant list (Note, this number has also now changed). Before a project is initiated, inventories for populations and distribution of threatened, endangered, and sensitive species will be conducted on a priority basis. Biological evaluations will be prepared. Each inventory will list all plant species found in the survey area. Previously surveyed areas can be checked for species occurrence when the Federal and regional plan lists change (p 4-28).

Biological evaluations and any required surveys and inventories of all threatened, endangered, and sensitive species will be completed prior to all project activities to insure the protection and/or mitigation of all TES species (p 4-29)

The Forest will coordinate closely with the U.S. Fish and Wildlife Service concerning all proposed management activities that have the potential to impact threatened or endangered species. The Forest will participate in the recovery objectives for both bald eagles and peregrine falcons outlined in Chapter III of the FEIS (Note, also for Spalding's catchfly now that it has been added to the ESA list) (p4-29).

Monitoring will be used in the evaluation of estimated outputs in the FEIS and the anticipated habitat conditions described in the Forest-wide Standards and Guidelines, and in the management areas. The evaluation will determine if wildlife habitats and population trends occur as projected, and will form the basis for changing plan direction if necessary (p 4-29).

### Forest-wide standards and guidelines

Nongame wildlife habitat S&G 5: Seeps, springs, bogs, wallows, and other wet areas are inherently unique and will be evaluated at the project level for their value as wildlife habitat and to provide appropriate levels of protection (p 4-57).

Riparian and fish habitat S&G 5: Seeps, springs, bogs, and other wet areas, generally under 10 acres, are inherently unique and will be evaluated on a project level basis for their wildlife and other values and will be given appropriate levels of protection. Where needed, employ mitigation measures to protect unique vegetation, wildlife, and water related characteristics (p 4-59).

Range S&G 2: Allotment management plans will include a strategy for managing riparian areas for a mix of resource uses. A measurable desired future riparian condition will be established based on existing and potential vegetative conditions (p 4-63).

Ecosystems and diversity standards and guidelines (p 4-66):

1. Maintain native and desirable introduced or historic plant and animal species.
2. Provide or develop an ecologically sound distribution and abundance of plant and animal communities and species on the stand, basin, and forest levels.
3. Provide for all seral stages of terrestrial and aquatic plant associations in a distribution and abundance that meets the goal. ....
4. Meet standard and guideline requirements....
5. During project planning, site-specific management prescriptions should be developed and evaluated that meet objectives for biological diversity and ecosystem function....
6. Reductions in diversity of plant and animal communities and tree species from that expected in a natural forest, or from that similar to the existing diversity in the planning area, may be prescribed to meet overall multiple-use objectives.
7. The introduction of plants will be assessed and controlled to meet management objective and to prevent any native species (or plant community) from becoming endangered or threatened.
8. Plant community ecology is sensitive to management changes. The communities will be monitored for diversity relative to successional stages and type conversions.
9. Identify, inventory, and provide for local, traditional Native American food and cultural plants.

Timber management species diversity S&G 2: Reforestation of “noncommercial” tree species (hardwoods and conifers such as pacific yew, western juniper) should be considered in meeting management area objectives (page 4-74).

Timber management species diversity S&G 3: Special and unique ecological communities such as aspen and other hardwood stands, seeps, springs, bogs, and other riparian areas should receive special attention and protection from potentially damaging management activities. Silvicultural prescriptions will specifically address measures to protect, maintain, and enhance aspen and other hardwood clones, clumps, and stands (p 4-74).

Threatened, endangered, and sensitive species standards and guides (p 4-89 to 4-90)

1. Legal and biological requirements for the conservation of endangered, threatened and sensitive plants and animals will be met. All proposed projects that involve significant ground disturbance or have the potential to alter habitat of endangered, threatened or sensitive plant and animal species will be evaluated to determine if any of these species are present (FSM 2670 Threatened, Endangered and Sensitive Plants and Animals).



2. Where endangered or threatened species are present, the required biological assessment process will be carried out according to the requirements of the Endangered Species Act (Public Law 93-205); consultation requirements with USDI Fish and Wildlife Service and state agencies will be met. Before the project can be carried out, protection or mitigation requirements shall be specified (36 CFR 219.27(a) (8)). Habitat for existing federally classified threatened and endangered species will be managed and monitored to achieve objectives of recovery plans.
3. When sensitive species are present, a biological evaluation will be prepared. There must be no impacts to sensitive species without an analysis of the significance of adverse effects on its population, habitat, and on the viability of the species as a whole. Habitat for sensitive plants and animals will be managed to ensure that the species do not become threatened or endangered through Forest Service actions. Species management guides will be prepared over the next 5 years and will be used as strategies for ensuring that sensitive species do not become threatened or endangered or result in a loss of species viability.
4. For endangered, threatened and sensitive species, determine and monitor the status of populations and habitats and the strategies implemented for protection. Maintain and update lists of threatened, endangered, and sensitive plants and animals periodically as new information is collected....
5. The Forest and ranger districts will keep records and inventories of essential and critical habitats and their distribution. Inventories will include careful monitoring of the species and their habitats.
6. Collection of TES plant species will only be allowed under permit. The issuance of permits must be preceded by the same degree of assessment required for other projects.
7. Maintain contacts with Federal, state, and other agencies, groups, and individuals concerned with the management of TES species (USDA Forest Service 1981).

## Topics and Issues Addressed in This Analysis

### Issues

Public scoping for this project was initiated in July of 2016.

Oregon Wild submitted three comments related to botanical resources discussed in this report.

The site rehab PDC (Project Design Criteria) should require use of native species, not just “prefer” it. Forest response: The PDC makes it very clear that non-native species would only be used in very limited situations.

Decompacting soils is a good idea, but it comes with trade-offs, such as damage to the roots of existing vegetation, and spreading weeds. The PDC make no effort to balance these trade-offs. Forest response: PDCs for the project very specifically are designed to reduce the chances of spreading non-native invasive plants (“weeds”).

In order to comply with NEPA requirements and cover both the programmatic and site-specific impacts of restoration, the NEPA analysis must carefully document all the contingencies under which covered restoration actions might occur ... all the different plant communities; impacts to habitat for all the different special status species..... Forest response: This botanical report discusses impacts to habitat for special status species.

All of the botanical issues brought up by the public have been addressed by either a project design criteria, or will be analyzed in the EA. For these reasons, no botany related key issues, or indicators were developed for this analysis.

## Resource Indicators and Measures

Enhancement of sensitive and culturally significant plant resources, were not identified as part of the purpose and need for the project. Nor was control of invasive plants part of the purpose and need. No key issues regarding botanical resources were identified during scoping. Since specific areas where projects may occur have not been identified, it is impractical to quantify potential impacts to botanical resources. For these reasons, the discussion of potential effects to botanical resources is qualitative in nature.

## Methodology

This report describes sensitive plant species, culturally significant plant species, and invasive plants potentially found in the planning area. Project design criteria (PDC) are proposed to help protect known sensitive plant populations, and to protect potential sensitive plant habitat. PDCs that require protection of special habitats such as lithosols and riparian areas will help to sustain populations of culturally significant plants. Additional PDCs have been developed to discourage introduction and spread of invasive species.

Potential direct, indirect, and cumulative effects of the alternatives on known sensitive plant populations, potential sensitive plant habitat, culturally significant plants, and invasive plants are presented. Effects analysis determinations for sensitive plants follow definitions as outlined in Forest Service Manual 2672.42. There is no formal process for analysis of culturally significant plants. Therefore, the discussion of existing condition and potential effects to these species will be fairly general. The Umatilla National Forest has been implementing the Umatilla National Forest FEIS Invasive Plants Treatment Project since 2010. The effects discussion for invasive plants tiers to the process outlined in that document.

## Information sources

The following sources of information were used to determine which species, and their respective habitats, may occur within, or adjacent to, the Umatilla National Forest. They were also used to analyze effects to sensitive plants, culturally significant plants, and invasive species.

- Region 6 Regional Forester Special Status Species List (USDA Forest Service July 13, 2015)
- GIS mapping layers (vegetation, streams and wetlands, aerial imagery)
- Sensitive Plants of the Umatilla and Malheur National Forests (USDA FS, 2006).
- Field Guide to Sensitive Plants of the Malheur National Forest (unpublished document, 2015).
- United States Department of Interior Fish and Wildlife Service (USDI-FWS) website
- Forest Service Natural Resource Manager database (USDA Forest Service 2013). This database includes information on where botanical surveys have been done on the forest in the past. It also contains information on sensitive plant populations.
- Species Fact Sheets provided by the Interagency Special Status / Sensitive Species Program website [<http://www.fs.fed.us/r6/sfpnw/issssp/>] of the Pacific Northwest Region, Forest Service and Bureau of Land Management's Oregon and Washington State Offices; and
- Literature, reports, conservation plans, conservation assessments, and species descriptions on file at the Umatilla National Forest Supervisor's Office.
- Umatilla National Forest Final Environmental Impact Statement and Record of Decision: Invasive Plants Treatment Project. (USDA Forest Service 2010)
- Plant Association guides for the Blue Mountain area (see complete list under references section)
- Potential Vegetation Hierarchy for the Blue Mountains Section of Northeastern Oregon, Southeastern Washington, and West-central Idaho (Powell et al. 2007)

## Botanical Surveys

Much of the Umatilla NF has had some level of botanical survey since the early 1990s. When most of these surveys were done there were only vascular plants on the sensitive plant list. The current sensitive list now also includes non-vascular plants (mosses and liverworts), lichens, and fungus. In addition, there are currently several vascular plants that were not on the sensitive list at the time of the historic surveys.

Botanical surveys have not been done specifically for this project. Project design criteria direct that as specific projects are proposed, botanical surveys will be conducted. Sensitive plants, culturally significant plants, and invasive plants will all be searched for and documented as part of these botanical surveys.

## Incomplete and unavailable information

There are very few empirical studies on the impacts of disturbance to most sensitive plant species. The strategy for management of known populations has generally been avoidance of activities that may impact populations. Therefore, all discussion of potential impacts to sensitive plant populations and habitat is based upon general experience and inferred responses based upon observations and studies of more common species.

Although there are some species of plants commonly known to be culturally significant to local tribes, the Umatilla NF does not possess a complete list of species which are important to local tribes. The Forest does not map or track specific populations of culturally significant plants. For this reason, general effects to all habitats have been extrapolated to include impacts to the respective culturally significant species that occur in each habitat.

## Habitat analysis groups

Rather than evaluate effects to species individually, this analysis places species into major habitat groups. Effects are then discussed in relation to these habitat analysis groups. Sensitive species lists are dynamic and changes to the lists occur every few years as new information is obtained. Many endemic and globally rare species are permanently on the sensitive species lists due to their inherent rarity. Other species are removed when a sufficient number of occurrences have been discovered throughout their range, and/or when populations are deemed to be secure and safe from threats. Conversely, other species are added to the list when it has been determined that the survey efforts indicate that the species is truly rare and in need of being deemed sensitive by the Regional Forester. Using habitat analysis groups to evaluate effects to sensitive species will thus cover potential impacts to sensitive species that are currently on the list, as well as those rare species that may be designated as sensitive in the future. Thus, this analysis does not evaluate effects to specific sensitive species.

While the habitat analysis group concept was developed primarily for sensitive species analyses, it can be applied to any plant or plant habitats. Thus, similar to the sensitive species, the potential impacts of the proposed action to culturally significant plants and non-native invasive species will be addressed through the habitat analysis groups.

Habitat analysis groups are primarily based on the potential vegetation hierarchy of the Blue Mountains (Powell et al. 2007) and the various plant association guides for the Blue Mountain area (Crowe & Clausnitzer 1997, Johnson & Clausnitzer 1992, Johnson 2004, Johnson & Swanson 2005, and Wells 2006). Plant associations, plant communities, and plant community types are all potential vegetation types (Powell et al. 2007). They are a relatively fine scale description of plant habitats. These categories are too detailed and numerous to be useful units for analysis on a large landscape scale. Potential vegetation types are lumped into plant association groups (PAGs). Plant association groups are relatively coarse-scale groups of various habitats that can be further lumped into potential vegetation groups (PVGs). Potential vegetation groups are aggregations of plant association groups with similar environmental regimes and dominant plant species. Each aggregation typically includes PAGs representing a predominant temperature or moisture influence.

The habitat analysis groups discussed in the affected environment section of this report are based on PVGs. For example, habitat analysis groups may correspond directly to a PVG (e.g. cold upland forests), correspond to a group of PVGs (e.g. warm riparian forests *and* shrub lands), or PVGs may be further divided based on important ecological characteristics (e.g. cold and warm riparian herb lands are divided and recombined into wet meadows, moist

meadows, peatlands). The habitat analysis groups presented below were developed because they represent the best approach to assess potential impacts to plant biodiversity. They are presented in two major categories: upland habitats and riparian/aquatic habitats.

## **Spatial and temporal context for effects analysis**

### **Direct and indirect effects boundaries**

The spatial context for this analysis is the Umatilla National Forest. Since plants do not generally move over large areas quickly, and no downstream effects are anticipated, it is not necessary to analyze effects to sensitive plants outside of the Umatilla NF boundary.

The temporal context for effects analysis includes short term and long term effects. Short-term effects are considered to be one to two years after project implementation. These would generally be from direct effects such as destruction due to ground disturbance from heavy equipment, and incineration from burning. Long term effects for this analysis are considered to be more than two years after implementation of all activities. These effects would generally be from indirect effects such as changes in sunlight, erosion rates, hydrologic regimes, and changes in animal grazing patterns and intensity.

### **Cumulative effects boundaries**

The spatial boundary for analyzing cumulative effects to botanical resources is the Umatilla NF. This is because plants do not move across the landscape to any significant extent. The temporal scale for cumulative effects analysis begins around 1860, which is when mining and sheep grazing began to alter the area. It spans through current time to about 30 years into the future. It is thought that the 30-year timeline into the future should account for the potential of increasing temperatures and reduced moisture that are expected to occur if climate change proceeds as predicted.

## **Basis of effects determinations**

### **Federally listed, proposed and candidate species**

Under the implementing regulations (50 CFR 402) of the Endangered Species Act, Federal agencies must review their actions and determine whether the action may affect federally listed and proposed species or proposed or designated critical habitat. To accomplish this, Federal agencies must request from the Service a list of species and critical habitat that may be in the project area or they can request our concurrence with their species list. This list is now obtained on the internet.

Once a species list is obtained or verified as accurate, Federal agencies need to determine whether their actions may affect any of those species or their critical habitat. If no species or their critical habitat are affected, no further consultation is required. If they may be affected, consultation with the Service is required. This consultation will conclude either informally with written concurrence from the Service or through formal consultation with a biological opinion provided to the Federal agency. The possible effect determinations for federally listed plants are outlined in the USFWS Section 7 consultation process. The various calls are listed in Appendix 1: Definitions of effects calls.

### **Forest Service sensitive species**

Forest Service sensitive species are designated by each regional forester for their respective regions. (FSM 2670). Sensitive species are those plant and animal species identified by a regional forester for which population viability is a concern, as evidenced by:

- a. Significant current or predicted downward trends in population numbers or density.
- b. Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

The four possible effect determinations for sensitive plants were outlined in Streamlining Biological Evaluation and Conclusions for Determining Effects to Listed, Proposed, and Sensitive Species. (USDA Forest Service, 1995, Salwasser, H., D. Bosworth, and J. Lowe). The various calls are listed in Appendix 1.

### Culturally Significant Plants

Analysis of potential impacts to culturally significant plants is focused on how the project will ensure the continued sustainability and productivity of the various habitats that support culturally significant species.

### Non-native Invasive Plants

Analysis of potential impacts to non-native invasive plants is focused on how the project will comply with the Umatilla NF FEIS for the Invasive Plants Treatment Project.

## Affected Environment

### Federally listed, proposed, and candidate species

**Spalding's catchfly** (*Silene spaldingii*) is the only documented federally listed plant species on the Umatilla NF. Spalding's catchfly is currently listed as Threatened under the Endangered Species Act. This is defined as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (USFWS, 1973). Spalding's catchfly is found at scattered locations in southeastern British Columbia, eastern Washington, northeastern Oregon, and east to northern Idaho and western Montana. It occurs in open grasslands in areas with mostly deep soils. Sometimes it is found in open ponderosa pine and dry Douglas fir forests, and on shrubby slopes within grasslands. On the Umatilla NF, it is known only from the low elevation grasslands on the Pomeroy Ranger District. There is no habitat for this species on any of the other districts of the Umatilla NF.

**Whitebark pine** (*Pinus albicaulis*) is a candidate for listing under the Endangered Species Act. Candidate species are plant and animal taxa considered for possible addition to the List of Endangered and Threatened Species. These are taxa for which the Fish and Wildlife Service has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposal to list, but issuance of a proposed rule is currently precluded by higher priority listing actions. Whitebark pine grows in cold high elevation settings on shallow rocky soils. There are several documented stands of whitebark pine present in the high elevation areas in the southern portion of the North Fork John Day Ranger District. There is no habitat for this species on any of the other districts of the Umatilla NF.

### Forest Service designated sensitive plant species

There are 46 species of Washington listed Region Six designated sensitive plants species suspected to occur on the Washington portion of the Umatilla National Forest. Of these, eleven species have been documented on the Washington portion of the Umatilla NF. Twenty seven of the suspected and documented species are found in habitats where aquatic restoration activities may be implemented.

There are 96 species of Oregon listed Region Six designated sensitive plants suspected to occur on the Oregon portion of the Umatilla National Forest. Of these, 22 species have been documented on the Oregon portion of the Umatilla NF. Sixty five of the suspected and documented species are found in habitats where aquatic restoration activities may be implemented. See Appendix 2: Sensitive plant occurrence and effects calls at the end of this report for a complete list of sensitive plant species for the Washington and Oregon portions of the Umatilla National Forest. This list also identifies which species are documented, and which habitat types each occupies.

### Culturally significant plant species

Culturally-significant plants include many important plants that are collected and used by Native American tribal members and/or the general public as food, medicine, or in ceremonial or traditional activities. These species occur in various habitats across the Forest, and include a variety of mushrooms, berries, roots, herbs, twigs, and leaves. It is

conceivable that almost any species has some potential use to humans. How much of any particular species is currently collected is impossible to quantify.

## Invasive plant species

Invasive plants are defined as non-native species whose introduction does or is likely to cause economic or environmental harm or harm to human health. Invasive plants have the potential to displace native plant communities, increase fire hazards, negatively affect fish and wildlife habitat, degrade rangeland forage, compete with rare and culturally significant plants, increase soil erosion, and adversely affect scenic beauty and recreational opportunities. Because of their competitive abilities, invasive plants can spread rapidly across the landscape, unconstrained by administrative or ownership boundaries.

Often the terms “invasive plants” and “noxious weeds” are used interchangeably; however, there are subtle differences in meaning. Noxious weeds are invasive or otherwise undesirable plants that have been designated by the State of Oregon as being injurious to public health, agriculture, recreation, wildlife, or any public or private property. Species which are identified as invasive, and which are also designated by the state as being noxious weeds, are the target species for treatment and monitoring on the Forest. Here, the terms “invasive plants” and “noxious weeds” are essentially used interchangeably.

Invasive plants tend to colonize disturbed ground along and around developments such as roads, highways, utility (powerline) corridors, cattle watering and loafing areas, logging landings, recreational residences, trails, campgrounds, and quarries. These are all places where native vegetation has been removed and disturbance has created areas for invasive plants to establish. The susceptibility of plant communities to invasion can also be influenced by community structure, and the biological traits of the various invader species.

## Sensitive plant habitat

The wide-ranging elevation and precipitation zones of the Umatilla National Forest support a wide diversity of plant species and communities. This diversity includes wet to dry grasslands, coniferous forests, sagebrush dominated steppe, wet meadows and diverse riparian areas. Trees adapted to various moisture and temperature regimes define the various forest habitat types. Virtually every habitat may potentially support one or more Forest Service sensitive plant species. Presented below is a general discussion of these habitats. It is not practical to try to quantify how many acres of each habitat type are in the project area.

Owing to the large number of sensitive plant species that may be found within the project area, it is efficient to talk about the broad habitat types (and indirectly the species that occur in those habitat types) most likely to be encountered within the area. For this analysis, plant communities and special habitats are grouped into broad habitat associations. Only the potential vegetation groups present within the planning area are included in the following discussion.

Each sensitive plant species has been assigned to one, or more, of each of the described habitat groups (see Appendix 2). It is assumed for the purposes of the effects analysis that all plants growing in a particular habitat would have similar responses to activities. Potential project impacts will be discussed in regards to the habitat type affected.

Most areas that do not support trees are described simply as “non-forested” or “shrub land” in the Forest Service existing vegetation database, and associated GIS layers. There is generally no further distinction for various shrub and grassland types. Due to this generalization, it is not possible to quantify how many acres of various non-forested habitat types are present in the project planning area. Habitat types that occur in the project planning area that conform to the potential vegetation classification system will be briefly discussed, as will special habitats that are not covered by the classification system (e.g. fens).

## Upland Habitats

Upland habitats include those areas that are classified as non-wetlands which are generally at a higher elevation than adjacent wetlands, riparian areas, and wetland/riparian zones transition zones. Upland habitats occupy the vast majority of acreage on the Forest.

**Table 1: Upland Habitat Analysis Groups**

Upland Habitat Analysis Group	General Habitat Description (Dominant and Climax Species in Parentheses)	Most Common Plant Association Groups (PAGs)
Upland Forests	<p><b>Cold Upland Forests</b> - Primarily moderate to high elevation conifer forests in the cold montane and subalpine zones (subalpine fir, whitebark pine, Engelmann spruce, lodgepole pine, grouse huckleberry, mountain juniper, pinemat manzanita, and elk sedge).</p> <p><b>Moist Upland Forests</b> - Moist mixed conifer forests at moderate to high elevations (grand fir, subalpine fir, lodgepole pine, Douglas-fir, Engelmann spruce, Rocky Mountain maple, Pacific yew, big huckleberry, twin-flower, queens' cup bead-lily, and heartleaf arnica)</p> <p><b>Dry Upland Forests</b> - Primarily fire-adapted conifer forests at low to moderate elevations; this is the most common type on the south half of the Forest (ponderosa pine, Douglas-fir, grand-fir, bitterbrush, snowberry, pinegrass, elk sedge)</p>	<p>cold moist UF cold dry UF cool dry UF</p> <p>cool wet UF cool moist UF warm moist UF</p> <p>warm dry UF hot dry UF</p>
Juniper Woodlands	Here, woodlands are exclusively characterized as areas where western juniper is the dominant climax species. These communities are found most extensively on the southern half of the Forest. (western juniper, mountain mahogany, sagebrush, Idaho fescue, blue bunch wheatgrass)	<p>hot dry UW hot moist UW</p>
Upland Shrub lands	Includes upland ecosystems with little or no tree cover; primarily sagebrush steppe and related habitats, but also includes many other less common shrub land systems (big sagebrush, mountain mahogany, bitterbrush, snowberry, shrubby cinquefoil, basin wild rye, Idaho fescue, blue bunch wheatgrass, prairie June grass)	<p>cold moist US warm moist US hot moist US warm dry US</p>
Lithosols (Scablands)	Often referred to as scablands, lithosols are habitats with very shallow soils on poorly weathered bedrock. Lithosols are often found as small inclusions within a larger matrix of grassland, shrub lands, and woodlands (stiff sagebrush, low sagebrush, Sandberg's bluegrass)	<p>warm dry US</p>
Grasslands and Upland Herb lands	Grassland habitats are generally dominated by bunchgrasses; this group also includes dry meadows dominated by introduced perennial grasses or native forbs (Idaho fescue, blue bunch wheatgrass, needle grasses, Great Basin wild rye, and Sandberg's bluegrass).	<p>cool moist UH warm moist UH warm dry UH hot dry UH</p>
Alpine and Subalpine Herb lands (Fellfields and Parklands)	This habitat group is found in the highest elevation areas, such as mountain tops and ridges at or above timberline. Fellfields are alpine communities that are characterized by rocky soils that support sparse vegetation. Subalpine parklands are treeless plant communities at or immediately below the timberline (alpine sedges, grasses, and forbs).	<p>cold moist UH cold dry UH</p>
Cliffs, Rock Outcrops, and Talus	Cliffs and rock outcrops have vertical faces where very few plants are able to survive. Talus and scree are accumulated boulders, cobbles, and gravel at the base of cliffs or on steep slopes (mosses, lichens, and sparse low-growing vascular plants).	<p>dry UH</p>

UF = upland forest, UW = upland woodland, US = upland shrub land, UH = upland herb land

## Riparian/Aquatic Habitats

Riparian and aquatic habitats are those that are characterized by a substantial presence of water and/or soil moisture. Aquatic habitats are defined by the persistent presence of flowing or standing water. Lakes, streams, marshes and their respective substrates are types of aquatic habitats. The interface, or transition zone, between aquatic and upland systems are classified as riparian habitats.

**Table 2: Riparian and Aquatic Habitat Analysis Groups**

Riparian/Aquatic Habitat Analysis Group	General Habitat Description (Dominant and Climax Species in Parentheses)	Most Common Plant Association Groups (PAGs)
Riparian Forests and shrub lands	<p>This group includes all riparian areas dominated by woody vegetation. These are usually riverine areas along perennial and intermittent streams.</p> <p><b>Cold Riparian Forests and shrub lands-</b> Primarily moderate to high elevation riparian conifer forests in the cold montane and subalpine zones (subalpine fir, Engelmann spruce, lodgepole pine).</p> <p><b>Warm Riparian Forests and shrub lands-</b> This is the most common riparian habitat group on the Forest; it includes the vast majority of actively-managed riparian areas at low to moderate elevations, which have the potential to be dominated by woody vegetation (willows, alder, aspen, black cottonwood, hawthorn, red-osier dogwood, pacific yew, Rocky Mountain maple, grand fir, Douglas-fir, birch, currants).</p>	<p>cold high SM RF/RS</p> <p>cold moderate SM RF/RS</p> <p>cold low SM RF</p> <p>warm high SM RF/RS</p> <p>warm moderate SM RF/RS</p> <p>warm low SM RF/RS</p> <p>hot moderate SM RF/RS</p> <p>hot low SM RF/RS</p>
Aquatic Habitats	<p>This group includes habitats that are entirely within flowing or standing or water. This includes lakes, ponds, streams, marshes, and flarks (pondweed, milfoil, creeping spikerush, cattail, torrent sedge, mosses).</p>	<p>high SM RH</p> <p>undescribed PAGs</p>
Moist Meadows and Vernal Swales	<p>Moist meadows and vernal swales are saturated in the spring and early summer, but by late summer the water table has significantly fallen below the soil surface yet still retains enough moisture for wetland species to dominate (Nebraska sedge, Baltic rush, meadow sedge, false hellebore).</p>	<p>warm moderate SM RH</p>
Groundwater-Dependent Ecosystems (GDEs)	<p>Groundwater-Dependent Ecosystems (GDEs) are typically small, but well distributed on the Forest. They often exist as relatively small inclusions in most other habitat types or form larger complexes with other aquatic, alpine, and wet meadow habitats (many obligate and facultative wetland sedges, grasses, mosses, and shrubs).</p> <p><b>Springs-</b> GDEs where groundwater emerges and flows into a channel and are often developed for off-site watering of livestock.</p> <p><b>Seeps-</b> GDEs where groundwater emerges but does not produce perennial flow. These often do not produce enough water for effective off-site water developments.</p> <p><b>Peatlands and Fens-</b> Peatlands are GDEs that accumulate partially decayed plant matter (peat) over hundreds to thousands of years. Peat (histic soil) is partially decayed plant material that accumulates under saturated conditions where there is little oxygen to facilitate decomposition. Fens are the primary type of peatlands on the Forest.</p>	<p>high SM RF</p> <p>high SM RS</p> <p>high SM RH</p>
Wet Meadows	<p>Wet meadows are flooded or saturated throughout the growing season with the water table at or slightly below the soil surface. These areas are typically dominated by obligate wetland species and are characterized by wetland soil types. Often they are features of larger wetland, riparian, or GDE complexes (bladder sedge, aquatic sedge, tufted hair grass, Holm's Rocky Mountain sedge). Marshes</p>	<p>cold high SM RH</p> <p>cool high SM RH</p> <p>warm high SM RH</p>
Dry and Degraded Riparian Meadows and Floodplains	<p>This group includes highly altered and degraded riparian habitats. These areas are characterized by low soil moisture due to lowered water tables and are often dominated by introduced exotic grass species or encroaching conifers (Kentucky bluegrass, meadow foxtail, orchard grass, lodgepole pine, sagebrush, shrubby cinquefoil, sulfur cinquefoil)</p>	<p>cold low SM RF</p> <p>hot low SM RF</p> <p>warm low SM RS</p> <p>hot low SM RS</p> <p>warm low SM RH</p>

SM = soil moisture, RF = riparian forest, RW = riparian woodland, RS = riparian shrub land, RH = riparian herb land



# Environmental Consequences

## Issues addressed and indicators for assessing effects

In order to discuss potential impacts to sensitive plant habitat, the following analysis is largely based upon potential impacts to various habitat types. It is assumed that all plants growing in a particular habitat would have similar responses to project activities. Effects calls were made for all sensitive plant species that are documented or suspected on the Umatilla NF (See Appendix 2). These calls are primarily based upon which habitat groups each species occurs in.

There is no specific Forest Service direction or quantitative indicators for analysis of effects to culturally significant or invasive plant species. As discussed above for sensitive plants, the analysis presented here focuses on the potential effects to the various habitats where these species are found.

## Alternative 1 – No Action

Under the No Action alternation, new restoration work would only occur after each project went through the full NEPA process. Current management would continue. Ongoing activities such as cattle grazing, wildfire suppression and/or containment, firewood cutting, recreation, and road maintenance (including danger tree removal) would continue. It is expected that many riparian areas and aspen stands would continue to decline without active restoration measures. Conifers would continue to encroach upon aspen stands and meadows, potentially shading out sensitive plant habitat, changing hydrological patterns, and decreasing potential for aspen recruitment. These processes and ongoing activities may potentially continue to increase aquatic and riparian habitat degradation, and retard recovery of federally listed and Forest Service sensitive species. Invasive plants would continue to be treated under the Umatilla FEIS, but continued impacts to aquatic and riparian areas may contribute to increased introduction and spread of invasive plants. Negative ongoing impacts to culturally significant plant habitat will also continue under the No Action alternative. While the restoration projects may still ultimately be accomplished under the no action alternative, the time needed for planning would be significantly increased.

By definition, direct and indirect effects (40 CFR 1508.8), and cumulative effects (40 CFR 1508.7) result from the proposed action, and thus are not germane to the No Action Alternative. Therefore, if the No Action Alternative is selected, there would be no direct, indirect, or cumulative effects to sensitive plant populations, or potential habitat. If Alternative 1 is selected, it would lead to an effects call of No Effect (NE) for all federally listed, proposed, or candidate species, and No Impact (NI) for all sensitive plant species. In addition, by not initiating activities there will be no new effects beyond those due to ongoing activities to culturally significant and invasive plants.

## Alternative 2– Proposed Action

Under the proposed action, stream restoration would occur on a forest-wide basis to meet the purpose and need of the action. See the associated EA for details of the proposed action.

## Project design criteria

Project design criteria (PDC's) and best management practices are part of the proposed action. The objectives for the project design criteria for botany are to provide protection and enhancement for sensitive plant and culturally significant plant populations and unique habitats. Additional objectives are included that provide protection to sensitive wetland and other habitats that could be damaged by ground disturbance. PDCs have been included that tier to the Region Six and Umatilla NF Invasive Plants Records of Decision (RODs). These will help to reduce the risk of introduction and spread of non-native invasive plants. Several other PDCs to protect soil, water, and wildlife resources will also inherently help to protect rare plant resources. See Appendix 3: Botany related project design criteria for the list of PDCs most directly related to protection of botanical resources. See the environmental analysis for a complete listing of the PDCs.

## **Potential Effects to Federally Listed, Proposed, and Candidate Plants**

**Spalding's catch-fly** is found in dry upland environments; it is unlikely that any may occur in areas where aquatic restoration activities will be implemented. The main activity that may occur in dry uplands is juniper reduction treatment. There is no significant juniper growing in the same area where Spalding's catchfly occurs, so there is no threat to the species due to juniper reduction treatments. Pre-implementation surveys will be done to ensure that no Spalding's catchfly populations are present in aquatic restoration action areas. If any populations are found, they will be protected from negative impacts during implementation of the project. Therefore, implementation of the proposed action will have no effect (positive or negative) to Spalding's catchfly populations or habitat.

**Whitebark pine** is found in high elevation, dry, upland environments. The main activity that may occur in dry uplands is juniper reduction treatment. There is no juniper growing in the same areas where whitebark pine occurs, so there is no threat to the species due to juniper reduction treatments. There is a slim chance that a few trees may occur in high elevation riparian zones. These areas are in places where restoration activities are unlikely. If any whitebark pine is found during surveys before project implementation, mitigations will be implemented to protect the trees. Therefore, implementation of the proposed action would have no effect (positive or negative) to whitebark pine populations or habitat.

## **Potential effects to documented sensitive plant populations**

All documented sensitive plant populations will be designated as "areas to protect" on all implementation documents. Populations will be buffered from ground disturbing activities during project layout. In the short term, there should be no impact to all documented sensitive plant populations. Improvements in water table levels, streambank stability, and natural hydrologic regimes would improve habitat for documented populations of sensitive plants. This will lead to a long term beneficial impact to documented sensitive plant populations.

## **Potential effects to sensitive and culturally significant plant habitat, and invasive plants**

All sensitive species effects calls are based upon potential impacts to their respective habitats. The discussion that follows here addresses each major habitat group. See Appendix 2 for the complete list of sensitive species and their associated effects calls. Calls are made for both short-term and long-term effects.

### **Unaffected upland habitats**

The vast majority of the Forest's lands will be unaffected by the proposed action. This includes the following habitat types: upland forests, upland shrub lands, lithosols, grasslands, upland herb lands, alpine and subalpine herb lands, cliffs, rock outcrops, and talus. In general, there will be no effects to these habitats, as virtually no proposed activities will occur in these habitats. The only exceptions would be potential effects from establishing staging areas, fence construction, and relocation of recreational impacts. However, due to the insignificant footprint of these activities relative to the land base of these habitats, the effects to these habitats would be immeasurable. Botanical surveys before implementation would ensure that newly discovered sensitive plant populations would be documented and protected. Since no new disturbance will occur, there should be no change in the status of culturally significant, or invasive plants in these habitats. While there may be some negligible yet undetectable effects to these habitats, the project design criteria assure that there will be no impact to sensitive plant populations, and no measurable impact to culturally significant species. In addition, there would be no increased threat of invasive plant introduction and spread into these habitats.

### **Juniper woodlands**

Fire exclusion, historic overgrazing, and climate change have facilitated the growth and expansion of juniper in hot dry, shallow-soiled areas. This habitat analysis group is comprised of any areas where juniper has the potential to dominate, including all upland areas where juniper encroachment is considered to be an issue. However, degraded floodplains where juniper is currently, or historically encroaching, is discussed in the dry meadow and floodplains section below.

There are several sensitive, culturally significant, and invasive species that occupy juniper woodlands. Potential sensitive species include Cordilleran sedge (*Carex cordillerana*), Henderson's rice grass (*Achnatherum hendersonii*), woven spore lichen (*Texasporium sancti-jacobi*), and arrow leaf thelypody (*Thelypodium eucosmum*). Habitat for these species may be affected by the proposed action (specifically category 12, juniper removal).

It is assumed that any hand thinning methods of juniper would not cause any disturbance that would promote or spread invasive species or negatively affect sensitive, or culturally-significant species. However, ground-disturbing activities, such as removal of juniper with heavy equipment, coupled with removal of the over story canopy and subsequent greater light infiltration can be expected to disturb sensitive and culturally significant species habitat. PDCs direct that all newly discovered populations of sensitive plant populations would be excluded from any ground-disturbing activities. This would assure that there would be no impact to sensitive plants in the short-term. In the short-term, some habitat for culturally significant plants could be impacted by ground disturbance. However, some root-crop plants actually thrive in highly disturbed areas. In the long-term, sensitive and culturally significant plant habitat may actually be beneficially impacted due to the restoration of historic canopy conditions and water relationships.

Key invasive species in juniper woodlands include knapweeds, Dalmatian toadflax, and the winter annual grasses such as medusa head rye, cheat grass and other annual bromes, and North Africa grass. In many juniper woodlands, these invasive grasses have a strong presence. Once these species infest an area, they can have a strong negative effect on ecosystem function, forage productivity, and fire regimes. In addition, they are almost impossible to eradicate once they gain a presence in the area. Thus, in this habitat group, the primary environmental management concern is an invasives control issue. For this reason, PDCs prohibit heavy equipment operation and other ground-disturbing activities in areas where invasive annual grasses are present. This PDC would reduce the chances that the proposed action would increase invasive species presence and extent.

### Riparian, wetland, and aquatic habitats

Riparian and wetland habitats are those that are characterized by the substantial presence of water, with riparian areas characterized by their location within the transition zone between aquatic and upland riverine systems. Wetlands are areas that are saturated with water permanently or seasonally, and are not subject to riverine processes. Aquatic habitats include areas with standing water at least part of the year. These include ponds, lakes, streams and rivers. The Umatilla NF has many types of riparian, wetland, and aquatic ecosystems that provide unique habitat for a large percentage of its sensitive plant species. Almost all of the sensitive mosses, liverworts, fungi, and lichens are found exclusively in these habitats. The specific habitat types which may experience impacts from the proposed action include riparian forests and shrub lands, moist meadows and vernal swales, aspen forests, wet meadows, ground water dependent ecosystems (GDEs), and aquatic areas.

These habitat types have had some of most significant historical impacts across the Umatilla NF. This degradation has occurred due to a combination of past management actions that include logging, grazing activities, mining, road building, and recreational activities. Many of these areas have been seeded with persistent non-native forage species such as meadow fox-tail and Kentucky bluegrass.

It is expected that the majority of proposed restoration projects will occur in these habitat types. Proposed activities in these areas include placement of woody debris, channel and streambank restoration, spring development and protection, juniper reduction, and road rehabilitation.

Some acute ground disturbance will be involved in the management activities within this habitat group. However, there will be no direct impact from the proposed action to known populations of sensitive species. Several design criteria outline steps to survey for and protect populations, as well as special habitats. This should essentially eliminate any risk to sensitive plants in these areas. The action alternative will have long-term beneficial effects to riparian and aquatic habitats and their associated sensitive species. This is because additional habitat will be created or restored as a result of this project. Because of the relatively large scale of this habitat type and the amount of

management action that will take place within it, there may be minimal negative short-term impacts to potential habitat during implementation but long-term impacts will be beneficial. Therefore, the proposed action will have no impact in the short term, and beneficial impact in the long term for sensitive plant species that occur in riparian and aquatic habitats.

The proposed action would help to reduce the infestation and spread of invasive plants. This is because management actions would support the recovery of the native plant communities within these ecosystems. There are several project design criteria that minimize or eliminate risk of invasive plant infestation during and after project implementation. Additional PDCs prescribe the revegetation of areas disturbed during project activities. These PDCs would assure that the proposed action would not lead to new introductions or spread of invasive plants.

Because there are no design criteria specifically protecting culturally significant plant species, there may be some short-term negative impacts to individual plants, and their habitats from project implementation in areas where there would be use of heavy machinery or where other ground disturbance may occur. However, there will be long-term benefits due to the restoration of currently degraded habitats that have the potential to support these species. Populations of culturally significant riparian species should benefit in the long term from any restoration activities that improve stream and wetland function.

### Dry and Degraded Riparian Meadows and Floodplains

This habitat group is the one that is most in need of restoration. It includes areas that have been heavily altered and degraded by decades of natural and human activities. These meadows are often heavily grazed by native and domestic ungulates. Head-cuts, down-cuts and other changes to hydrology have lowered water tables in these areas and transformed them from wet or moist meadow habitats into dry meadows or rocky floodplains. These areas were historically often converted to non-native perennial forage grasses. When these areas are disturbed by mechanical activities, or heavy grazing, they are often easily colonized by non-native and invasive plant species. In some cases, changes in potential vegetation to forested or woodland vegetation types have occurred due to conifer or juniper encroachment.

These degraded meadow types are generally no longer suitable habitat for many sensitive plant species they once may have supported. However, a few sensitive plant species have been found to inhabit areas of historic disturbance where mineral soil was once exposed. These include Bolander's spikerush (*Eleocharis bolanderi*), adder's tongue (*Ophioglossum pusillum*), and several moonwort (*Botrychium*) species. The distribution and vigor of sensitive species in these areas before historic impacts began are unknown. Historic grazing practices have resulted in loss of potential habitat for these species through general trampling and herbivory, as well as accelerated erosion processes that have altered local surface hydrology.

Project design criteria outline steps that would reduce potential impacts to these habitats. However, pre-implementation surveys should allow projects to be implemented in ways that will not detrimentally impact newly discovered populations. In the short term there should be No Impact (NI) to sensitive plants and habitats in dry degraded riparian meadows. Over the long term, proposed activities would restore appropriate habitat for sensitive species by raising the water table. Therefore would be a long-term beneficial impact (BI) on those species that are found in degraded wet and moist meadow systems.

Degraded meadows and floodplains often experience weed invasions that can overtake the original plant community. Restoring degraded systems using appropriate project design criteria to reduce invasive introductions and to provide revegetation will actively and passively promote the recovery of native species. Therefore, implementation of the proposed action will have direct and indirect beneficial impacts to native plant communities and their resilience to invasions.

Dry and degraded meadows historically provided large areas of habitat for culturally significant root crops. As these meadows have dried up, those habitats have been less productive and less suitable for those species. Because there are no design criteria specifically protecting culturally significant plant species, there may be some short-term negative impacts to individual plants, and their habitats from project implementation in areas where there would be

use of heavy machinery or where other ground disturbance may occur. However, there will be long-term benefits due to the restoration of currently degraded habitats that have the potential to support these species. Populations of culturally significant riparian species should benefit in the long term from any restoration activities that improve dry and degraded meadows.

## **Cumulative Effects**

Cumulative effects are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions” (40 CFR 1508.7).

It is highly likely that historical activities, particularly intensive cattle and sheep grazing, timber harvest, mining activities, road construction, and fire suppression have destroyed populations, and altered habitats for sensitive and culturally significant plants. Since records of rare plant populations have only been kept for the last thirty years, historical effects are not quantifiable. Similarly, since culturally significant plant populations have not been tracked, it is not possible to quantify changes in time to those species populations. It is likely however, that due to habitat degradation (especially riparian, wetland, and aquatic habitats), that populations of culturally significant plants have declined over the last 100 years.

Changes in climate influence vegetation, water, and disturbance frequencies, and these changes, in turn, influence one another. A change in one aspect may cause a cascade of responses that in some cases counteract, and in others may magnify the initial change. Such interactions make prediction of the likely effects of climate change difficult at the scale of the analysis area even if the nature of climate change at the local scale were known.

Logically the species most at risk in a rapidly changing climate regime are those with small geographic ranges (e.g., local endemics, locally rare species), narrow habitat tolerances, limited dispersal abilities, strong interspecific dependencies, low genetic diversity, and those that have recently experienced, or are actively experiencing population declines. Species that are already on mountain tops at high elevations are especially vulnerable. They don't have the option of moving up the mountains to more favorable temperatures. Attempts to quantify the degree of change would be largely speculative at this point.

Since 1990, protection and management of sensitive species and their habitats in the form of project design features, avoidance, or other mitigations have been included in nearly all projects. This is in accordance with forest planning documents and policy set forth in FSM 2670. These policies have reduced the potential of cumulative effects to sensitive plant and culturally significant plant populations and their supporting habitats.

Direct and indirect effects to sensitive plant populations and potential habitat have been described above. The determination of either No Impact (NI) or Beneficial Impact (BI) were made for known populations, and potential habitat of sensitive plants in and immediately adjacent to the project planning area. In addition, it was determined that implementation of the proposed action would have very little negative short-term impacts and long-term beneficial effects to habitat for culturally significant species. Project design criteria would ensure that project activities would not lead to increased introduction or spread of invasive plants. Since these determinations indicate that there would be minor or no impact to these resources, there should be no cumulative effects to those resources resulting directly from project activities. It is intended that projects such as this ultimately provide a beneficial impact to sensitive plant, culturally significant plant habitats in the long run, and may even enhance sensitive plant resiliency over time.

## **Summary of Environmental Effects**

The United States Forest Service biological evaluation (BE) process was completed by a supervisory botanist. This process included a pre-field review of existing habitat and documented population information. USFS and United States Department of Interior, U.S. Fish and Wildlife Service (USDI-USFWS). Records were consulted in order to determine which rare plant species and potential habitat may occur in the planning area. Potential direct, indirect, and

cumulative effects to habitat types that support sensitive plants were analyzed. The effects calls for each habitat were applied to the respective species that may occur in each of those habitat types.

The No Action Alternative does not propose any new activities. Therefore there would be no direct or indirect impacts to sensitive plants, sensitive plant habitat, or federally listed, proposed, or candidate species. In addition, there would be no direct or indirect effects to culturally significant plants and their associated habitats. Nor would there be a change from the baseline condition in the risk of invasive species introduction and spread. Because no management would occur, there would be no proposed action effects to add to ongoing or future actions that would contribute to cumulative effects.

To reduce the risk of detrimental impacts to sensitive plant populations and habitats, project design criteria were incorporated into the proposed action. All documented populations of sensitive plants will be designated as areas to protect for all ground disturbing project activities. As specific projects are planned, botanical surveys would be conducted, and any newly discovered populations would be analyzed for protection or mitigation. Therefore, there will be no impact (NI) to currently documented populations of sensitive plants due to implementation of the proposed action. The proposed action also includes additional project design criteria to protect potential sensitive plant habitat. These project design criteria would also reduce the change of negative impacts to culturally significant plants and their habitat. Additional project design criteria would reduce the risk of new introduction and spread of invasive plants.

All sensitive and culturally significant species that are found in dry upland habitats would not be impacted by potential activities in the proposed action. There would be no short-term or long-term effects since virtually no activities would occur in those areas. The only potential impact would be due to parking equipment or decking logs or other materials in lithosol habitats. There is a PDC that prevents these activities, so any risk of negative impacts to those habitats has been mitigated. Therefore, the effects calls for all sensitive species that are restricted to dry upland habitats is No Effect (NE) for both short-term and long-term impacts.

All sensitive and culturally significant species that are found in degraded meadows, riparian, aquatic, and wetland habitats may potentially be in areas where activities may occur. Pre-implementation surveys and PDCs to protect all sensitive plant populations should effectively protect those sensitive species. Culturally significant species may be negatively impacted by ground disturbance in the short-term. Improved riparian habitat conditions that will be achieved by these projects will ultimately have a beneficial impact (BI) to any sensitive and culturally significant plant species that may occur in project areas. Therefore, the effects calls for all sensitive species that occur in all degraded meadows, riparian, aquatic, and wetland habitats is No Effect (NE) for the short-term, and Beneficial Effect (BE) for the long-term.

Invasive plants will continue to be inventoried and treated in all habitats across the Umatilla NF. PDCs in the proposed action would help to reduce the introduction and spread of these species in the activity areas. The improvement of vegetation conditions and hydrologic processes should result in a reduction of invasive plants in both the short and long terms.

## **Compliance with laws, regulations, Forest Service policies and Umatilla NF Forest Plan**

### **Federal Laws**

#### **Endangered Species Act**

This analysis demonstrates that implementation of the proposed action would have no effect to any populations or habitat for either the federally listed plants Spalding's catchfly, or the federal candidate plant whitebark pine. Therefore, Section 7 consultation with the USFWS is not required for this project for plants.

## **National Forest Management Act and National Environmental Policy Act**

This biological evaluation discloses the existing condition of sensitive plant populations and habitats, culturally significant plant habitat, invasive plants, and analyzes the potential effects from the proposed activities to these resources. This report also explains how the proposed action would comply with the Umatilla NF invasive plants FEIS. This report therefore provides all necessary scientific information to comply with the National Forest Management Act and the National Environmental policy act.

## **Forest Service Policy**

This biological evaluation discloses the existing condition of sensitive plant populations and habitats, and analyzes the potential effects from the proposed activities to these resources. This report therefore provides all necessary scientific information to comply with Forest Service Manual direction and policies regarding sensitive species and native plant restoration management.

## **Umatilla National Forest Land and Resource Management Plan**

All proposed project activities are consistent with the applicable Umatilla National Forest plan goals, desired future conditions, objectives, standards and guidelines as they relate to botanical resources. The BE process that was undertaken for this project include the pre-field review process to access potential species and habitat in the area, development of project design features, and viability analysis for sensitive plant species. These analysis steps comply with the Umatilla forest plan components as they relate to botanical resources.

## **Other Relevant Mandatory Disclosures**

There are no other relevant mandatory disclosures related to sensitive plants or other botanical resources for this project.

## **Monitoring Recommendations**

It is recommended that implementation monitoring of known sensitive plant populations in activity areas is done. Monitoring would largely consist of site visits before and after implementation with the collection of photo points and updated population information. This monitoring would provide assurance that project design criteria as they relate to botanical resources are implemented as planned. Monitoring would also allow an opportunity to confirm that the assumptions used for development of the PDCs are correct. For example, a revisit to areas buffered a certain distance from activities would confirm is the distance is sufficient to prevent blow down, or unacceptable changes in hydrology or sunlight.

# References

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# Appendix 1: Definitions of effects calls

## Federally Listed Species

### 1. No Effect (NE)

Occurs when a project or activity will not have any “effect” on a listed species or critical habitat.

### 2. May Affect – Likely to Adversely Affect (LAA)

If the determination in the biological assessment is that the project May Affect – Likely to Adversely Affect (LAA) a listed species or critical habitat, formal consultation must be initiated (50 CFR 402.12). Formal consultation must be requested in writing through the Forest Supervisor (FSM 2670.44) to the appropriate FWS Field Supervisor, or NOAA Fisheries office.

### 3. May affect – Not Likely to Adversely Affect (NLAA)

If it is determined in the biological assessment that there are “effects” to a listed species or critical habitat, but that those effects are May affect – Not Likely to Adversely Affect (NLAA), then written concurrence by the FWS or NOAA Fisheries is required to conclude informal consultation (50 CFR 402.13).

### 4. Beneficial Effect (BE)

Written concurrence is also required from the FWS or NOAA Fisheries if a beneficial effect determination is made. Requests for written concurrence must be initiated in writing from the Forest Supervisor to the State Field Supervisor (FWS or NOAA).

## Sensitive Species

### 1. No Impact (NI)

A determination of “No Impact” for sensitive species occurs when a project or activity will have no environmental effect on habitat, individuals, a population, or a species.

### 2. May Impact Individuals or Habitat, but Will Not Likely Contribute to a Trend towards Federal Listing or Cause a Loss of Viability to the Population or Species (MIH)

Activities or actions that have effects that are immeasurable, minor, or are consistent with Conservation Strategies would receive this conclusion. For populations that are small – or vulnerable – each individual may be important for short and long-term viability.

### 3. Will Impact Individuals or Habitat with a Consequence that the Action May Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species (WIFV)

Loss of individuals of habitat can be considered significant when the potential effect may be:

1. Contributing to a trend toward Federal listing (C-2 or C-2 species)
2. Results in a significantly increased risk of loss of viability for a species
3. Results in a significantly increased risk of loss of viability for a significant population (stock)

### 4. Beneficial Impact (BI)

Projects or activities that are designed to benefit, or that measurably benefit a sensitive species should receive this conclusion.

(US Department of Agriculture, Forest Service, Regions 1, 4, and 6. 17Aug 1995)

## Appendix 2: Sensitive Plant Occurrence and Effects Calls

### Washington Sensitive Plants

Scientific name	Common name	Habitat Groups	Planning area presence	Effects calls Alt 2 short term/long term
<b>Mosses</b>				
<i>Scouleria marginata</i>	marginate splash-zone moss	AQUA, CRIP, WRIP	SUS	NI/BI
<b>Lichens</b>				
<i>Dermatocarpon meiohyllizum</i>	brook lichen, streamside stickleback	AQUA, WRIP, CRIP	SUS	NI/BI
<i>Leptogium burnetiae</i>	Burnet's skin lichen	ASP?, ROCK, RIP	SUS	NI/BI
<i>Texosporium sancti-jacobi</i>	woven spore lichen	GRASS, LITH	SUS	NI/NI
<b>Vascular Plants</b>				
<i>Allium campanulatum</i>	Sierra onion	GRASS, ROCK, SUBD	DOC	NI/NI
<i>Allium dictuon</i>	Blue Mountain onion	GRASS, ROCK	DOC	NI/NI
<i>Antennaria corymbosa</i>	meadow pussy-toes	CUCF, GRASS, RIP	SUS	NI/BI
<i>Astragalus arrectus</i>	Palouse milk-vetch	GRASS, WDCF	SUS	NI/NI
<i>Astragalus arthurii</i>	Arthur's milk-vetch	GRASS, ROCK	DOC	NI/NI
<i>Astragalus cusickii</i>	Cusick's milk-vetch	GRASS, ROCK	DOC	NI/NI
<i>Bolandra oregana</i>	Oregon bolandra	RIP	DOC	NI/BI
<i>Botrychium ascendens</i>	upward-lobed moonwort	CUCF, CRIP, SUBD, SUBW	SUS	NI/BI
<i>Botrychium crenulatum</i>	crenulate moonwort	CUCF, CRIP, SUBD, SUBW	SUS	NI/BI
<i>Botrychium hesperium</i>	western moonwort	CUCF, CRIP, SUBD, SUBW	SUS	NI/BI
<i>Botrychium lineare</i>	slender moonwort	CUCF, CRIP, SUBD, SUBW	SUS	NI/BI
<i>Botrychium paradoxum</i>	twin-spiked moonwort	CUCF, CRIP, SUBD, SUBW	SUS	NI/BI
<i>Botrychium pedunculatum</i>	stalked moonwort	CUCF, CRIP, SUBD, SUBW	SUS	NI/BI
<i>Calochortus macrocarpus</i> var. <i>maculosus</i>	green-banded mariposa-lily	GRASS, ROCK, WDCF	DOC	NI/NI
<i>Cheilanthes feei</i>	Fee's lip fern	ROCK (limestone)	SUS	NI/NI
<i>Cicuta bulbifera</i>	bulblet-bearing water hemlock	RIP	SUS	NI/BI
<i>Diplacus cusickii</i>	Cusick's monkey-flower	GRASS, ROCK	SUS	NI/NI
<i>Eremothera pygmaea</i>	dwarf evening-primrose	GRASS, ROCK	SUS	NI/NI
<i>Erythranthe patula</i>	stalk-leaved monkey-flower	ROCK, WRIP	SUS	NI/BI
<i>Isoetes nuttallii</i>	Nuttall's quillwort	RIP	SUS	NI/BI
<i>Juncus howellii</i>	Howell's rush	RIP	SUS	NI/BI
<i>Lipocarpha aristulata</i>	aristulate lipocarpha	WRIP	SUS	NI/BI
<i>Lomatium rollinsii</i>	Rollin's desert-parsley	GRASS, LITH, ROCK	DOC	NI/NI
<i>Muhlenbergia mexicana</i> var. <i>mexicana</i>	western muhly grass	WRIP	SUS	NI/BI
<i>Oenothera caespitosa</i> ssp. <i>marginata</i>	tufted evening-primrose	GRASS, ROCK	SUS	NI/NI
<i>Ophioglossum pusillum</i>	adder's-tongue	CUCF, CRIP, SUBW	SUS	NI/BI
<i>Penstemon deustus</i> var. <i>variabilis</i>	variable hot rock penstemon	GRASS, ROCK	SUS	NI/NI
<i>Penstemon wilcoxii</i>	Wilcox's penstemon	GRASS, ROCK, WDCF	SUS	NI/NI
<i>Phacelia minutissima</i>	dwarf or least phacelia	ASP, RIP	SUS	NI/BI
<i>Pilularia americana</i>	American quillwort	AQUA	SUS	NI/BI
<i>Pyrrocoma scaberula</i>	rough pyrrocoma	GRASS, ROCK, WDCF	DOC	NI/NI
<i>Ranunculus populago</i>	mountain buttercup	CRIP, SUBW	DOC	NI/BI
<i>Ribes oxycanthoides</i> ssp. <i>irriguum</i>	Idaho gooseberry	WRIP, WDCF, WMCF	DOC	NI/BI
<i>Rorippa columbiae</i>	Columbian yellowcress	AQUA, RIP	SUS	NI/BI
<i>Rotala ramosior</i>	lowland toothcup	AQUA, WRIP	SUS	NI/BI
<i>Silene spaldingii</i>	Spalding's catch-fly	GRASS, WDCF	DOC	NE/NE
<i>Spiranthes porrifolia</i>	western ladie's-tresses	RIP	SUS	NI/BI
<i>Swertia perennis</i>	felwort	SUBW	SUS	NI/BI
<i>Trifolium douglasii</i>	Douglas' clover	RIP, WDCF, WMCF, WRIP	DOC	NI/BI

# Oregon Sensitive Plants

Scientific name	Common name	Habitat Groups	Planning area presence	Effects calls Alt 2 short/long term
<b>Mosses</b>				
<i>Bryum calobryoides</i>	Bryum moss	CUCF, ROCK	SUS	NI/NI
<i>Encalypta brevicollis</i>	candle snuffer moss, stubby extinguisher moss	ROCK	SUS	NI/NI
<i>Entosthodon fascicularis</i>	banded cord-moss, Hasselquist's hyssop	GRASS, RIP, ROCK	SUS	NI/BI
<i>Polytrichum strictum</i>	strict polytrichum moss	CRIP, CUCF, SUBW	SUS	NI/BI
<i>Pseudocalliergon trifarium</i>	blunt water moss, worm moss	AQUA, SUBW	SUS	NI/BI
<i>Schistidium cinclidodonteum</i>	schistidium moss	CUCF, ROCK, SUBD, SUBW	SUS	NI/BI
<i>Tetraphis geniculata</i>	tetraphis moss	CUCF, RIP, WMCF	SUS	NI/BI
<i>Tortula mucronifolia</i>	mucron-leaf tortula moss	ASP, CUCF, RIP, ROCK, SUBD, SUBW	SUS	NI/BI
<b>Liverworts</b>				
<i>Anastrophyllum minutum</i>	tiny notchwort	SUBD, SUBW	SUS	NI/BI
<i>Anthelia julacea</i>	alpine silverwort	SUBD, SUBW	SUS	NI/BI
<i>Barbilophozia lycopodioides</i>	giant fourpoint, maple liverwort	CUCF, ROCK, SUBW	SUS	NI/NI
<i>Harpanthus flotovianus</i>	great mountain flapwort	CRIP, CUCF, SUBW	DOC	NI/BI
<i>Jungermannia polaris</i>	Arctic flapwort	AQUA, CRIP, SUBW	SUS	NI/BI
<i>Lophozia gillmanii</i>	Gillman's pawwort	CRIP, ROCK, SUBW	DOC	NI/BI
<i>Peltolepis quadrata</i>	shieldscale liverwort	ROCK, SUBD	SUS	NI/BI
<i>Preissia quadrata</i>	blister ribbon	CRIP, CUCF, ROCK, SUBW	SUS	NI/BI
<i>Ptilidium pulcherrimum</i>	lovely fuzzwort, naugahyde liverwort	CUCF, ROCK, SUBW	SUS	NI/BI
<b>Lichens</b>				
<i>Texosporium sancti-jacobi</i>	woven spore lichen	GRASS, LITH, WDCF	SUS	NI/NI
<b>Fungi</b>				
<i>Albatrellus avellaneus</i>	Avel's albatrellus polypore	CRIP, CUCF, SUBW	DOC	NI/BI
<i>Pseudorhizina californica</i>	umbrella false morel	ASP, CUCF, WMCF, WRIP	SUS	NI/BI
<b>Vascular Plants</b>				
<i>Achnatherum hendersonii</i>	Henderson's ricegrass	GRASS, LITH	SUS	NI/NI
<i>Achnatherum wallowaense</i>	Wallowa ricegrass	GRASS, LITH	SUS	NI/NI
<i>Allium dictyon</i>	Blue Mountain onion	GRASS, ROCK	DOC	NI/NI
<i>Astragalus diaphanous</i> var. <i>diurnus</i>	transparent milk-vetch	GRASS, ROCK	SUS	NI/NI
<i>Astragalus misellus</i> var. <i>misellus</i>	pauper milk-vetch	GRASS, ROCK	DOC	NI/NI
<i>Boechera atrorubens</i>	sickle-pod rockcress	GRASS, WDCF	SUS	NI/NI
<i>Botrychium ascendens</i>	upward-lobed moonwort	CUCF, CRIP, SUBW, WMCF	SUS	NI/BI
<i>Botrychium crenulatum</i>	crenulate moonwort	CUCF, CRIP, SUBW, WMCF	DOC	NI/BI
<i>Botrychium hesperium</i>	western moonwort	CUCF, CRIP, SUBW, WMCF	DOC	NI/BI
<i>Botrychium lunaria</i>	common moonwort	CUCF, CRIP, SUBW, WMCF	SUS	NI/BI
<i>Botrychium montanum</i>	mountain moonwort	CUCF, CRIP, SUBW, WMCF	DOC	NI/BI
<i>Botrychium paradoxum</i>	twin-spiked moonwort	CUCF, CRIP, SUBW, WMCF	DOC	NI/BI
<i>Botrychium pedunculatum</i>	stalked moonwort	CUCF, CRIP, SUBW, WMCF	DOC	NI/BI
<i>Calochortus macrocarpus</i> var. <i>maculosus</i>	green-banded mariposa-lily	GRASS, WMCF	DOC	NI/NI
<i>Calyptidium roseum</i>	rosy pussypaws	GRASS, WMCF	SUS	NI/NI
<i>Carex cordillerana</i>	cordilleran sedge	ASP, WRIP, WMCF	DOC	NI/BI
<i>Carex gynocrates</i>	Northern/yellow bog sedge	SUBW	SUS	NI/BI
<i>Carex lasiocarpa</i>	slender woolly sedge	SUBW	SUS	NI/BI

Scientific name	Common name	Habitat Groups	Planning area presence	Effects calls Alt 2 short/long term
<b>Vascular Plants Continued</b>				
<i>Carex retrorsa</i>	retrorse sedge	WRIP	SUS	NI/BI
<i>Carex saxatilis</i>	limestone or russet sedge	SUBW	SUS	NI
<i>Carex scirpoidea</i> ssp. <i>stenochlaena</i>	Alaskan single-spiked sedge	SUBW	SUS	NI/BI
<i>Carex subnigricans</i>	dark mountain sedge	SUBW	SUS	NI/BI
<i>Carex vernacula</i>	native sedge	SUBD, SUBW	SUS	NI/BI
<i>Castilleja viscidula</i>	sticky paintbrush	SUBD	DOC	NI/NI
<i>Cheilanthes feei</i>	Fee's lipfern	ROCK	SUS	NI/NI
<i>Comastoma tenellum</i>	slender gentian	SUBD, SUBW	SUS	NI/BI
<i>Cryptantha grandiflora</i>	Clearwater cryptantha	GRASS, ROCK, WDCF	DOC	NI/NI
<i>Cryptantha simulans</i>	pine woods cryptantha	GRASS, SUBD, WDCF	SUS	NI/NI
<i>Cyperus lupulinus</i> ssp. <i>Lupulinus</i>	Schweinitz's flatsedge	WRIP	SUS	NI/BI
<i>Cypripedium fasciculatum</i>	clustered lady's slipper	RIP, WMCF	SUS	NI/BI
<i>Elatine brachysperma</i>	short seeded waterwort	AQUA	SUS	NI/BI
<i>Eleocharis bolanderi</i>	bolander's spikerush	WRIP	DOC	NI/BI
<i>Epilobium oregonum</i>	Oregon willow-herb	CRIP	DOC	NI/BI
<i>Eremothera pygmaea</i>	dwarf evening primrose	GRASS, LITH, ROCK	SUS	NI/NI
<i>Erigeron davisii</i>	Davis' fleabane	GRASS, ROCK, WDCF	SUS	NI/NI
<i>Erigeron disparipilus</i>	white cushion fleabane	GRASS, ROCK, WDCF	SUS	NI/NI
<i>Gentiana prostrata</i>	moss gentian	CRIP, SUBW	SUS	NI/BI
<i>Lipocarpha aristulata</i>	aristulate lipocarpha	AQUA, WRIP	SUS	NI/BI
<i>Listera borealis</i>	northern twayblade	CUCF, RIP, WMCF	DOC	NI/BI
<i>Lomatium pastorale</i>	meadow lomatium	GRASS, ROCK	DOC	NI/NI
<i>Lycopodium complanatum</i>	ground cedar	CUCF, RIP, SUBD, SUBW, WMCF	SUS	NI/BI
<i>Muhlenbergia minutissima</i>	annual dropseed	AQUA, WRIP	SUS	NI/BI
<i>Ophioglossum pusillum</i>	adder's-tongue	CRIP, SUBW	SUS	NI/BI
<i>Pellaea bridgesii</i>	Bridge's cliff-brake	ROCK, SUBD	DOC	NI/NI
<i>Penstemon deustus</i> var. <i>variabilis</i>	variable hot rock penstemon	GRASS, ROCK	SUS	NI/NI
<i>Phacelia minutissima</i>	dwarf or least phacelia	ASP, WRIP	SUS	NI/NI
<i>Phlox multiflora</i>	many-flowered phlox	ROCK, WDCF	SUS	NI/NI
<i>Pilularia americana</i>	American pilwort	AQUA	SUS	NI/BI
<i>Pinus albicaulis</i>	whitebark pine	SUBD	DOC	NE/NE
<i>Potamogeton diversifolius</i>	diverse-leaved pondweed	AQUA	SUS	NI/BI
<i>Pyrola dentata</i>	tooth-leaved pyrola	WDCF, WMCF	DOC	NI/NI
<i>Pyrrocoma scaberula</i>	rough pyrrocoma	GRASS	SUS	NI/NI
<i>Rorippa columbiae</i>	Rorippa columbiae	WRIP	SUS	NI/BI
<i>Rotala ramosior</i>	lowland toothcup	AQUA, WRIP	SUS	NI/BI
<i>Salix farriar</i>	Farr's willow	SUBW	DOC	NI/BI
<i>Salix wolfii</i>	Wolf's willow	SUBW	SUS	NI/BI
<i>Suksdorfia violacea</i>	violet suksdorfia	ROCK, WRIP	SUS	NI/BI
<i>Thelypodium eucosmum</i>	arrow-leaved thelypod	WRIP	DOC	NI/BI
<i>Trifolium douglasii</i>	Douglas' clover	WRIP	DOC	NI/BI
<i>Triglochin palustris</i>	marsh arrow-grass	CRIP, SUBW	SUS	NI/BI
<i>Trollius albiflorus</i>	globe flower	CUCF, CRIP, SUBW	SUS	NI/BI
<i>Utricularia minor</i>	lesser bladderwort	AQUA	SUS	MIH

## **Habitat group descriptions**

AQUA = Aquatic plants, growing in standing or flowing water, or on drying edges of vernal pools

ASP = Aspen

CUCF = Cool to cold upland coniferous forest, includes subalpine fir, lodgepole pine, and Engelmann spruce

CRIP = Cool to cold riparian areas, including streams, wet meadows, lake shorelines

GRASS = Dry grasslands, rocky slopes

LITH = Shallow soiled scablands, usually dominated by stiff sage

RIP = Riparian areas, cold or warm, includes seeps, springs, vernal wet draws in drier forest

ROCK = Cliffs, talus, ridges at low to moderate elevations, can be wet or dry

SUBW = Subalpine-Wet, including riparian areas, wet cliffs, and wetlands, including bogs

SUBD = Subalpine-Dry, including high elevation cliffs, talus, dry meadows

WRIP = Warm riparian areas including streams, wet meadows, and vernal pools. Often with cottonwood or Red alder along streams.

WDCF = Warm dry upland coniferous forest, includes ponderosa pine, juniper, Douglas and grand fir

WMCF = Warm, moist, upland coniferous forest includes grand fir, larch, and Douglas fir forests

## **Planning Area Presence Descriptions**

DOC = Documented in planning area

SUS = Suspected, potential habitat may be in planning area, but not highly likely

SSUS = Strongly suspected, populations nearby, and/or well defined habitat present in project area

NH = No habitat, no suitable potential habitat in planning area

## Appendix 3: Botany related Project Design Criteria

### Sensitive plant populations and habitats

#### **Pre-Implementation:**

Proposed restoration projects shall be completely surveyed early in the implementation planning process by a qualified botanist or rare plant technician, to identify and assess any sensitive or rare plant populations or habitats.

Proposed restoration projects shall develop restoration plans for degraded sensitive species habitats and/or mitigation plans in areas where sensitive plant populations are documented. This shall be accomplished by a journey-level Forest Service botanist in collaboration with the interdisciplinary team and other stakeholders.

#### **Implementation:**

Heavy equipment, vehicle operation, road construction, staging areas, stockpile areas, piling of slash, fence construction, recreation sites, prescribed fires, fire lines, and other operational activities shall not be allowed in any documented sensitive plant sites unless it is for the demonstrated benefit or protection of the site. All sensitive plant populations should be buffered 100 ft. from all operational activities where topography does not restrict such a distance. Sensitive plant sites and associated buffers shall be identified as Areas to Protect (ATPs).

### Sensitive and Unique Habitats

#### **Implementation:**

The integrity of unique habitats shall be maintained. Unique habitats include meadows, rim rock, talus slopes, cliffs, animal dens, wallows, bogs [fens], seeps and springs. This shall be accomplished by incorporating cover buffers approximately 100 feet in width.

Heavy equipment, vehicle operation, road construction, staging areas, stockpile areas, piling of slash, fence construction, recreation sites, prescribed fires, fire lines, and other operational activities shall not occur within, or at the interface of lithosols (scablands).

Cutting of juniper displaying old-growth characteristics such as sparse limbs, dead limbed or spiked-tops, deeply furrowed and fibrous bark, branches covered with bright-green arboreal lichens, noticeable decay of cambium layer at base of tree, and limited terminal leader growth in upper branches shall be prohibited.

### Groundwater-Dependent Ecosystems

#### **Implementation:**

The integrity of groundwater-dependent ecosystems (GDE) shall be maintained. Spring developments shall not dewater GDEs. Spring developments shall not be allowed if the spring is occupied by rare or sensitive plant species, or in peatlands, fens, or where histic soils are present. These sites should be buffered 100 ft. from all operational activities where topography does not restrict such a distance, and be identified as Areas to Protect (ATPs).

Heavy equipment, vehicle operation, road construction, staging areas, stockpile areas, piling of slash, fence construction, fire lines, and other operational activities shall not be allowed in springs, seeps, or any other GDE, unless it is for the benefit or protection of the GDE or development of the spring.

Spring developments should not disturb the spring orifice (point where water emerges). Spring head boxes should be placed in a location that will cause the least amount of disturbance to the soils and vegetation of the GDE. Preferable locations for spring head boxes should be in an established channel downstream from the orifice or a location where flowing water becomes subsurface.

Construct fenced exclosures around spring developments to prevent damage from wild ungulates and livestock.

Spring developments shall have a return flow system to minimize the diversion of surface and subsurface water from the catchment area. Consider using a float valve or similar device to reduce the amount of water withdrawn from the GDE.

When developing springs, place troughs far enough away from GDEs, wetlands, and other sensitive or unique habitats to prevent erosion, compaction, or degradation to sensitive soils and vegetation due to livestock congregation.

## Invasive Plant Species

### **Pre-Implementation:**

Proposed restoration projects shall be surveyed for invasive plants early in the implementation planning process by a qualified invasive plant specialist /technician, to identify and assess any undocumented invasive plant infestation.

For project areas that overlap or are adjacent to invasive plant infestations, assure that there is sufficient time prior to develop a long-term site strategy for control, eradication, and revegetation of the site. This shall be accomplished by a qualified invasive plant specialist in collaboration with the interdisciplinary team and other stakeholders.

### **Implementation:**

All activities shall be conducted in a manner as to minimize or prevent the potential spread or establishment of invasive species.

Actions conducted on National Forest System Lands that will operate outside the limits of the road prism, require the cleaning of all heavy equipment (bulldozers, skidders, graders, backhoes, dump trucks, etc.) prior to entering the National Forest. Cleaning will be inspected and approved by the forest officer in charge of administering the project.

Assure that all materials are weed-free. Use weed-free straw and mulch for all projects conducted or authorized by the Forest Service on National Forest System Lands. If State certified straw and/or mulch is not available, individual Forests should require sources certified to be weed-free using the North American Weed Free Forage Program standards or a similar certification process.

Inspect active gravel, fill, sand stockpiles, quarry sites, and borrow material for invasive plants before use and transport. Treat or require treatment of infested sources before any use of pit material. Use only gravel, fill, sand, and/or rock that are judged to be weed free by a qualified invasive plant specialist.

Prohibit heavy equipment operation, vehicle travel, staging areas, fire-control lines, and any other operational activities in invasive plant infestations, unless the activities are for the express purpose of eradicating the infestation or INV1 and INV2 have been completed.

Conduct post-implementation monitoring for invasive plants. Continue monitoring, treating, and removing invasive plants until all infestations are eradicated and native plant species are well established.

## Native Plant Materials and Revegetation

### **Pre-Implementation:**

Where the need for native plant materials is anticipated, assure that there is sufficient time for the plant materials specialist to develop a native plant materials plan and/or prescription prior to implementation of planned revegetation, rehabilitation, and restoration projects. This may include allowing for enough time to harvest and store hardwood cuttings, produce suitable quantities of native seed, and/or grow-out container stock.

Locally adapted, genetically appropriate native plant materials are the first choice for use in revegetation, restoration and rehabilitation, where timely natural regeneration of the native plant community is not likely to occur. Use a diverse assemblage of species that have the potential to naturally occur in the project area. Acquire native seed or plant sources as close to the watershed as possible. Examples of areas that may need treatment include: habitat restoration efforts, log decks, staging areas, landing zones, temporary roads, slash piles, culvert replacements, severely burned areas, skid trails, decommissioned roads, invasive species treatments, and other disturbances.

It is anticipated that use of non-native species will rarely occur, but may be needed under certain conditions. Non-native, non-invasive plant species may be used in the following situations: (1) when needed in emergency conditions to protect basic resource values (e.g., soil stability, water quality, and to help prevent the establishment of invasive species), (2) as an interim, non-persistent measure designed to aid in the re-establishment of native plants, (3) if native plant materials are not available and/or are not economically feasible, and (4) in permanently altered plant communities. Under no circumstances shall non-native invasive plant species and/or noxious weeds be used for revegetation.

Development, review and/or approval of revegetation, rehabilitation, and restoration prescriptions, including species selection, genetic heritage, growth stage, seed mixes, sowing guidelines, and any needed site preparation, shall be accomplished by a plant materials specialist who is knowledgeable about local ecological conditions and plant materials.

**Implementation:**

Concentrate plantings above the bank-full elevation. Sedge and rush mats should be placed and sized to prevent their movement during high flow events.

Newly planted and/or seeded areas should be protected from animals and activities that may prevent, retard, or slow the establishment and recovery of native vegetation. Site-specific measures may include building fences, piling slash, jack-strawing, closing areas to vehicles, and/or temporarily changing grazing regimes until the desired condition is sufficiently achieved.